THE PARK AND THE PLAN

INTRODUCTION

The Boston Harbor Islands became a unit of the National Park System in November 1996 by an act of Congress (Public Law 104-333) that contains several provisions which, in total, make this a national park like no other. This section of the draft general management plan provides a brief description of the park's setting, resources, current management, and the purpose of this, its first, general management plan.

While the official name is Boston Harbor Islands National Recreation Area, the park is known as Boston Harbor Islands, a national park area. This latter name was chosen by the Boston Harbor Islands Partnership in consultation with the National Park Service Washington office and American Indians. The reason for the choice is to foster public appreciation of the park's resources and history, such as past use of the islands by Indians, rather than to focus the public's perception solely on recreation.



Boston Inner Harbor

OVERVIEW

THE SETTING

Until 1970, when the Commonwealth of Massachusetts began to acquire them for the benefit of the public, the islands of Boston Harbor had been shielded from public view and appreciation for generations by commercial and industrial development along the waterfront and by the poor quality of harbor water. In 1985, Boston Harbor was labeled the most polluted harbor in the nation, but the dramatic recovery of water quality during the 1990s, through the Massachusetts Water Resources Authority's wastewater treatment, contributed to widespread support for establishing a national park area. Now, after an investment of more than \$4 billion in better wastewater management and treatment, the harbor appears clean and inviting. Over the past three decades, numerous public and private agencies have once again turned their focus to Boston

Harbor and its islands, as the region seeks to rebuild its historical and ecological ties to Massachusetts Bay.

The 30-some islands of Boston Harbor, ranging in size from less than 1 acre to 214 acres, have served numerous public and private uses and are a unique example of an island cluster intimately tied to the life of a city. Although within sight of a vibrant and densely populated metropolitan area, they continue to offer the visitor a rare sense of isolation. Their proximity to a large urban population and their special geological, prehistoric, historic, and natural features contribute to their national significance.

THE REGION

Boston is the most populous city in New England and a major economic, educational, and cultural center. The city itself is the twentieth most populous in the United States, but its metropolitan area, ranking seventh, is the third most densely populated in the country. Approximately 7 million people live within a 50-mile radius, or an hour's drive of, downtown Boston, and 40 million people live within 250 miles. In addition, the metropolitan area is home to 116 institutions of higher education, including Harvard University, the nation's oldest.

Boston and its immediate region contain some of the oldest, most valuable, and most visited historic sites in the nation. Boston's Freedom Trail and, more recently, its National Historical Park have drawn visitors for decades. The Society for the Preservation of New England Antiquities and other private nonprofit groups own significant historic properties. To the south is Plimoth Plantation, containing replicas of the first permanent English settlement in the Northeast and an Indian village, and today one of the best living-history museums in the country. To the northwest are Concord and Lexington, both renowned Revolutionary War sites; Concord also has important sites related to the literary and intellectual life of the 19th century. Directly north of the city, Essex County embraces the communities of Salem, Gloucester, Newburyport, and Marblehead, all significant maritime centers in the early national period.

The metropolitan area is home to 11 National Park units—the Adams, Boston, Lowell, and Minute Man National Historical Parks; the Boston African-American, Salem Maritime, Saugus Iron Works, Longfellow, Kennedy Birthplace, and Olmsted

METROPOLITAN BOSTON



National Historic Sites; and the Boston Harbor Islands. The area also features the country's oldest metropolitan park system; Boston's famous "Emerald Necklace"; the nation's first statewide conservation organization; and one of the country's first state park systems, created in 1897. The metropolitan park system, operated by the Metropolitan District Commission, was planned by Charles Eliot and Sylvester Baxter and created by the state legislature in 1893. Eliot, who dedicated his career to the system that would protect the area's remaining open spaces, understood the importance of the harbor's estuaries, beaches, and islands, and made them integral to his 1893 park plan. Frederick Law Olmsted, designer of New York's Central Park and parks and landscapes throughout the country, designed the "Emerald Necklace" of parks in Boston that have been renewed and revitalized in the 1990s. The Trustees of Reservations, established in 1891, was the model for land trusts internationally and protects more than 33,000 acres in Massachusetts.

The Boston Harbor islands form a transition zone between the open ocean and the settled coast, between the world beyond Boston Bay and the features specific to it. They are not only a physical entrance but a gateway as well to a long sweep of history, from Native American uses through the explosive growth of the city and industry and the concerns of the current post-industrial age. Both literally and symbolically, the islands offer a unique vantage point from which visitors can contemplate metropolitan growth and change.

The islands also offer an exceptional perspective on change in the region's ecosystem. Magnificent open spaces surrounded by expanses of open water, the islands vividly illustrate the region's complex geological past and the continual effect of natural processes on their habitats, their uses, even their shapes. From them, visitors can learn about how such complex ecosystems as harbors are revived. The improvement of Boston Harbor waters has regenerated the biotic communities of the islands and the sea around them and has made possible an impressively wide range of recreational uses. Thus the islands are both a recreational haven for urban residents and tourists and a highly effective teaching tool about natural change, cultural history, and stewardship.

MASSACHUSETTS BAY, BOSTON HARBOR, AND THE ISLANDS

Massachusetts Bay is a projection of the Atlantic Ocean, which stretches between Gloucester in the north and

Marshfield in the south. Its easternmost edge touches the boundary of Stellwagen Bank National Marine Sanctuary, which was established in 1992. The bay encompasses approximately 800 square miles.

Part of Massachusetts Bay, Boston Harbor, includes the shores of six of Boston's neighborhoods (East Boston, Charlestown, North End, Fort Point, South Boston, and Dorchester) and seven other municipalities: Hull, Hingham, Weymouth, Quincy, Chelsea, Revere, and Winthrop. The Inner Harbor includes the mouths of the Charles and Mystic rivers and the port of Boston, and the Outer Harbor includes the three bays of Dorchester, Quincy, and Hingham. Combined, the Inner and Outer harbors comprise approximately 50 square miles and are bounded by 180 miles of shoreline. Within Boston Harbor are the Boston Harbor Islands, totaling approximately 1,600 acres. The Boston Harbor Islands national park area extends seaward 11 miles from downtown Boston. The park incorporates the 16 islands of the Boston Harbor Islands State Park.

Boston Harbor and the islands have undergone significant physical transformation over the last 300 years. Both human actions and natural forces have caused this change. Many people are aware of the dramatic expansion of the Shawmut Peninsula by filling tidal land over the centuries to create what is now the city of Boston. However, most people are not aware of similar changes to current and former harbor islands. Natural forces significantly eroded Sheep and Hangman to mere outcroppings. Causeways and land bridges were constructed to connect World's End, Deer, and Nut islands to the mainland, as well as other former islands such as the end of what is now sections of the town of Hull and Castle Island in South Boston. A modern vehicle bridge was constructed for Long Island. Massive landfills connected Wood, Noddles, Apple, and Governors islands for East Boston and Logan Airport. Today's metamorphosis is the dramatic construction of Spectacle Island with material from the central artery highway tunnel through Boston known as the "Big Dig." Today's visitor to the islands may get the sense of permanence. However, man and nature have had a dramatic impact on the geography of this fragile resource over a comparatively short period of time.

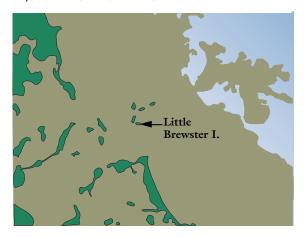
PARK RESOURCES

For a fuller description of the park's resources, see the Affected Environment section of the Draft Environmental Impact Statement on page 76, and Appendix 3, The Islands of Boston Harbor.

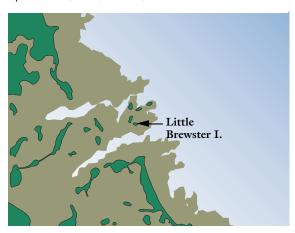
GEOLOGICAL FORMATION

of Boston Harbor

10,000 YEARS BEFORE PRESENT



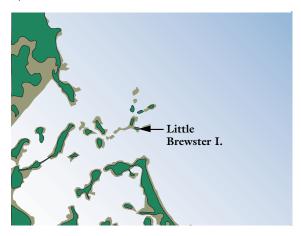
6,000 YEARS BEFORE PRESENT



4,000 YEARS BEFORE PRESENT



2,000 YEARS BEFORE PRESENT



LEGEND

Water

Land



Current Land Forms

GEOLOGY

Boston Harbor is part of the Boston Basin, a geological feature created by a shift in the Earth's crust millions of years before the glaciers. In the past 100,000 years, two separate periods of glaciation formed the hills that became the islands of Boston Harbor and created the local drainage system, consisting of the Charles, Mystic, and Neponset watersheds. The cores of many harbor islands are drumlins—glacier-formed, asymmetrical, elongate masses of till formed into smooth-sloped hills on the Boston Basin lowlands. In profile, they look like upside-down teaspoons. As the climate warmed and the glacier receded from the Boston area some 15,000 years ago, the melting of glacial ice raised the level of the ocean, eventually creating this section of the basin and isolating the islands. (See map, page 4.)

Drumlins may occur as scattered single hills, or in so-called swarms. The Boston Harbor Islands are a geological rarity, part of the only drumlin swarm in the United States that intersects a coastline. This "drowned" cluster of about 30 of more than 200 drumlins in the Boston Basin are not all elongate in shape, as most other drumlins are (molded in the direction of glacial flow). Geologists believe the islands illustrate two separate periods of glacial action. Many of the islands have more than one drumlin.

About a dozen of the islands (the Brewsters and several Hingham Harbor islands), however, are outcrops of bedrock, their shape and size molded by glacial erosion which exposed the bedrock.

Natural coastal processes, especially northeast storms, continue to reshape the island landforms. Rates of erosion on the islands can be dramatic. In general, the highest rates of beach erosion occur along beaches facing north and east, which are the dominant directions for winds and seas in these storms. The shifting shores of Thompson Island illustrate this process of erosion and sedimentation. Human use of the islands also effects erosion by removal of vegetative cover promoting erosion, or by structures built to prevent erosion.

Every island within the park, except for those composed largely of bedrock outcroppings, has beach areas lining portions of its shores. The beaches generally most attractive to recreational users in the park are found on Spectacle (recently replenished), Long, Lovell's, and Gallop's and are primarily sandy and possess comparatively few biological resources. Rocky beaches, however, such as at Peddock's, provide excellent habitat for invertebrates and the animals that feed on them.

Small barrier beaches have been identified on portions of Great Brewster, Gallop's, Peddock's, Bumpkin, Long, Rainsford, and Thompson islands. Two islands within the park, Lovell's and Long, have dunes. Lovell's has the more extensive dune system, whereas Long's dunes are in one discrete area on its southern shore.

WATER

Surface water on the islands is rather limited. Perennial ponds are found on Thompson Island and World's End, and freshwater marshes are found on Long, Peddock's, Middle Brewster islands, and World's End.

Although the waters of Boston Harbor are not included within the park boundary, they wash the island shores with twice daily tides. Boston Harbor, with a tidal range of 9½ to 10 feet, has one of the largest tidal ranges in the United States. Most of the harbor varies in depth from about 3 to 30 feet, but the north and south ship channels, between the airport and Spectacle Island, and between George's Island and Hull, can reach depths of 60 feet.

The natural watershed around Boston Harbor extends as far west as Hopkinton, Massachusetts, 25 miles inland. The farthest point from which water enters the harbor is the Quabbin Reservoir about 65 miles to the west, which supplies water to Boston and more than 100 surrounding communities.



Middle Brewster Island

Today, Boston Harbor is vastly cleaner than it had been for decades. As is typical of many coastal areas near major metropolitan centers the harbor had been used for waste disposal since colonial times. Sewage from 43 municipalities now undergoes primary and secondary treatment at Deer Island, where sludge is removed and where the remaining liquid is disinfected and soon will be diffused nine miles into Massachusetts Bay.

In recognition of the improved water quality, the governor and the mayor of Boston appointed a Joint Commission on the Future of Boston Harbor Beaches to recommend a restoration plan for the waterfront and island beaches with funding of \$30 million.

Improvements range from green space enhancements, bathhouse restoration, beach nourishment, and enhanced public transportation to increased public access to the beaches.

UPLAND VEGETATION

The flora of the islands reflects a long history of human alteration. The islands' drumlins are thought to have been covered with mature forests of hemlock, maple, oak, pine, and hickory, which were cleared to support agriculture and pasturage, and to supply firewood for fuel. In addition, the construction of the islands' massive fortifications severely disrupted much of the native flora. Thorough documentation of the characteristics of the terrestrial environment has not been done, but successional species including aspen, pine, birch, and white poplar are clearly evident on most of the islands.

Most of the fertile sites found on the islands were converted to agriculture over the past 300 years. The remnants of these attempts at subsistence farming are evident in the appearance of apples, pears, grapes, chives, garlic, asparagus, and horseradish.

Today, patches of undisturbed native flora are rare on the islands, and vegetation on most of the islands is dominated by grasses and sumac. The owners of World's End and Thompson Island have continued to manage expansive grasslands that are part of the cultural landscape, and Thompson Island has the only community of mixed oak forest, covering approximately one-tenth of the island.

TERRESTRIAL WILDLIFE

The diversity of upland and marine habitats provides good nesting and feeding opportunities for a number of bird species. Field surveys have identified more than 100 bird species including gulls, terns, herons, ducks, geese, hawks, plovers, sandpipers, doves, owls, woodpeckers, and perching birds. During migration, large numbers of shorebirds utilize the mudflats and salt marshes around the harbor, while transient hawks and songbirds regularly make use of the more remote islands, or those with suitable habitat. In late fall and winter, great flocks of waterfowl gather in harbor waters.

A few species of terrestrial mammals, including exotic species, occur throughout the islands, such as cottontail rabbits, raccoons, skunks, gray squirrels, mice, muskrats, voles, and Norway rats. Some species have been known to devastate populations of small vertebrates and nesting birds.

While no formal surveys have been conducted, Eastern garter snake, Northern brown snake, and Eastern smooth green snake are known to occur on the islands.

WETLAND AND AQUATIC MARINE VEGETATION AND WILDLIFF

The Boston Harbor Islands provide shelter and foodrich habitats for marine birds, mammals, fishes and invertebrates, as well as nurseries for their young. Much of the Gulf of Maine fauna can be found in Boston Harbor, especially around the Brewsters.



Horseshoe Crab on Grape Island

The once-plentiful eelgrass is the only type of seagrass now present in Boston Harbor; it is now confined to only four isolated areas, the largest of which is near the south coast of Bumpkin Island. Seagrass beds are critical wetlands components of shallow coastal ecosystems where they hold sediment, providing food and cover for a great variety of commercially and recreationally important fauna and their prey.

Salt marshes, highly productive ecosystems dominated by saltwater cordgrass, provide habitat for many marine organisms. The largest remaining salt marshes on the islands are found on Thompson and Snake islands. Smaller brackish marshes have been identified on Calf, Grape, Lovell's, and Peddock's. Mud flats, which generally occur on the periphery and at the expanding edges of salt marshes, are found on Raccoon, Snake, and Thompson.

Lobsters, crabs, and clams inhabit submerged portions of the islands. Mussels and barnacles cling to the intertidal zone. Jellyfish live in the surrounding waters. Several species of fish, including striped bass, bluefish, and winter flounder, live in waters surrounding the islands. Little Brewster, Nix's Mate, Shag Rocks, and other islands characterized by bedrock outcroppings contain rocky intertidal communities of rockweed and barnacles.

Harbor seals haul out on some of the outer islands. Because their feeding grounds or migratory routes are nearby, humpback, fin, minke, and North Atlantic right whales and white-sided and striped dolphins are potential, though rare, visitors, as are harbor seals as strays or strandings, and harbor porpoises.

PROTECTED SPECIES

The Massachusetts Natural Heritage Program lists six rare species known to exist within the park, including two species listed as threatened and four of special concern. They are the birds barn owl, common tern, least tern, and northern harrier, and the plants seabeach dock and American sea-blite.

The U.S. Fish and Wildlife Service reports several federally listed endangered and threatened species of fish, turtles, birds, and mammals near or in coastal waters of Massachusetts, but not known to be found among the Boston Harbor Islands. There are no island species on the federal list.

BUILDINGS AND STRUCTURES

Many of the Boston Harbor Islands contain buildings and structures related to such uses as coastal defense, agriculture, commercial fishing, year-round and summer habitation, resort life, industry, public health, immigration, and social welfare. More than 100 buildings and structures, including sea walls, forts, lighthouses, gun emplacements, concrete bunkers, wood-framed cottages, and brick military and institutional buildings, reflect the long history and changing character of the Boston Harbor Islands. With several notable exceptions, the buildings and structures of the Boston Harbor Islands have not been evaluated for their historical significance but will be the subject of several studies following this general management plan.

The partially restored Fort Warren, an impressive granite Third System fortification designated as a National Historic Landmark, has stood on George's Island as a major defensive post for the protection of the harbor in every conflict from the Civil War through World War II. Fort Andrews, erected on Peddock's Island in the first decade of this century, is a rare example of a relatively intact coastal fort of the Endicott Period (1888–1905) although its 26 remaining buildings and structures have suffered over 50 years of abandonment and are generally in poor condition.

Navigational aids constructed to guide ships through the often treacherous harbor waters include Boston Light on Little Brewster Island, a National Historic Landmark purported to include portions of the oldest lighthouse structure in the United States; and two lights on the National Register of Historic Places, Graves Light on The Graves and Long Island Head Light on Long Island.

Approximately 40 cottages on Peddock's Island, dating from the early 20th century, are the last remaining residential structures on the harbor islands (aside from year-round institutional residences on Thompson and Little Brewster). They are occupied by their owners during the summer and allude to the former prevalence of summer communities and recreational activities in the harbor, as well as fishing communities. In recent years, the Metropolitan District Commission has been acquiring, evaluating, and removing the cottages as owners vacate them.

On Deer Island an 1889 pump station, renovated for use as a visitor center, contains a community room and exhibits of historic pumps, recalling early attempts to deal concertedly and scientifically with the region's waste water that has been discharged to Boston Harbor since 1878. Contemporary structures include 12 egg-shaped sewage "digesters" each standing 170 feet high on the southern end of the island.

CULTURAL LANDSCAPES

The Boston Harbor Islands contain numerous cultural landscapes that, when combined with historic structures, archeological resources, and associated museum collections, relate the history and culture of the people that shaped the cultural resources in the vicinity of Boston Harbor. Most cultural landscapes of the harbor islands are characterized as "historic vernacular," meaning that they were imprinted by the settlement, customs, and everyday use of people who altered the physical, biological, and cultural character of their surroundings. Fields and forests once inhabited by American Indians were later used as Euro-American farms and pastures, that, when abandoned, were transformed through natural succession into stands of



British Men-of-War off Long Wharf Before American Revolution.

trees, shrubs, vines, and herbaceous vegetation. On Middle Brewster and Calf islands the stone walls, house foundations, and remnants of gardens still demarcate the summer communities that thrived prior to World War I. On Grape Island a farmhouse foundation and a lone willow tree remain, while horse pastures abandoned during World War II have reverted to tree cover.

Many islands may also be defined as "ethnographic landscapes," those containing natural and cultural resources that associated people define as "heritage resources" such as contemporary settlements, subsistence communities, and burial grounds. Such places can be found on Peddock's, Deer, Long, the Brewsters, and many other islands. On Peddock's Island, a community of summer cottages, previously a fishing village, has been in active use for nearly 100 years. On Deer Island, the tragic imprisonment of "Christian Indians" during King Philip's War marks a chapter in the region's history and is a place of great importance to contemporary Indians.

A surprising number of harbor islands and associated peninsulas are "historic designed landscapes," those consciously laid out by a landscape gardener, architect, or horticulturist according to design principles or by others in a recognized style or tradition. These are seen notably in the Olmsted design at World's End and in vestiges of military landscape design on several islands. Many island landscapes are also recognized as "historic sites," those places associated with a historic activity, event, or person. Such sites include the lighthouses on Little Brewster, whose landscape portrays the lifestyle of keepers who have tended the light for nearly 300 years, and on The Graves and Long Island.

ARCHEOLOGICAL SITES

The Boston Harbor Islands have a rich human history, some of which is revealed by physical evidence including prehistoric and historic archeological resources. The islands contain evidence of American Indian use of such archeological significance that, to date, 21 islands have been designated within an archeological district listed on the National Register of Historic Places. Archeologists assume that all islands not surveyed have potential prehistoric or pre-contact sites. In particular, the park's enabling legislation directs that park managers include programs to protect Indian burial grounds and sites associated with the King Philip's War.

Soils, which contain highly alkaline shell fragments, have helped preserve bone as well as remains of tools and foods that typically deteriorate in New England soils. This, coupled with the fact that most of the islands were never long or intensively inhabited by Euro-Americans, suggests that they are likely to provide the best remaining or most easily retrievable evidence of prehistoric human occupation in the Boston Bay area. Archeologists have established that the islands were used or inhabited by humans at least 8,000 years ago, and a 4,100-year-old human skeleton unearthed on one island in the late 1960s is one of the oldest ever excavated in New England.

Archeological sites of the historic period have not been systematically surveyed, although many are known to exist on the islands. Fifteen types of sites are known: agricultural, cemetery, fishing colony, fortification, hospital, hotel or resort, industrial, poorhouse, prison, prisoner-of-war camp, quarantine, sewage treatment, lighthouses, dumps, and miscellaneous other site types.

ETHNOGRAPHIC SITES

Traditionally associated groups—American Indians, and perhaps Irish, Portuguese, military families, fishermen, farmers, lighthouse keepers, and others—have ties to the Boston Harbor Islands, but research remains to be done to determine the extent of ethnographic sites on the Boston Harbor Islands.



Metacom (King Philip), son of Massasoit

Deer Island, to single out one island of ethnographic importance, has been used historically by Native Americans, quarantined immigrants, farmers, orphans, "paupers," military personnel, and tens of thousands of prisoners (at the recently demolished county house of corrections), but it has special significance to American Indians as a place of internment in King Philip's War. During the winter of 1675–76, American Indians from at least four "praying villages"—people who had become Christianized and were friendly with the English settlers—were forcibly removed to Deer Island. Estimates of people held on the islands vary, but research indicates that at least half of the American Indians on the islands died of exposure or lack of food, water, or appropriate

LAND COVER







Legend Drumlin Contours Open Land (Meadow, Scrub and Sumac) Wetland Forest Tidal Flat

HISTORIC STRUCTURES AND LANDSCAPES







HISTORIC STRUCTURES AND LANDSCAPES

Legend

★ National Historic Landmark

Lighthouse

Fortification

Cultural Landscape

Other Structure

medicines. Those that were finally released in May 1676 dispersed because their existing communities had become devastated. Native Americans return to Deer Island every year in October to solemnly commemorate their ancestors' suffering in this sorrowful historical chapter.

In the 1840s, when the potato famine drove a million or more Irish citizens to emigrate to the United States, Deer Island was a landing point for thousands, many sick and poverty-stricken, where the city of Boston established a quarantine hospital in 1847. Approximately 4,800 people were treated in the first two years, but more than 800 died and were buried in the Rest Haven Cemetery. In 1850, an almshouse was built to house paupers. Later institutional uses on Deer Island were a reform school, a county house of corrections, and a sewage treatment plant.

COLLECTIONS AND ARCHIVES

A substantial museum collection related to the Boston Harbor Islands, comprising more than 6,000 items, is scattered among more than a dozen organizations, ranging from local, city, state, and federal agencies and repositories, to private and nonprofit groups and institutions. The collection includes archeological, archival, historical, and natural history objects in a variety of print and nonprint formats.

ESTABLISHMENT OF THE PARK

Congress added the Boston Harbor Islands to the National Park System on November 12, 1996. The legislation (Public Law 104-333) is intended to foster the goals of current public and private land managers, including the Commonwealth of Massachusetts which began acquiring islands for the public's benefit in the late 1950s. In 1970, the Commonwealth had passed legislation (Chapter 742 of the Acts of the Massachusetts Legislature, 1970) that provided for the systematic acquisition of selected islands in Boston Harbor for recreation and conservation purposes. With that acquisition nearly complete, the enabling legislation for the Boston Harbor Island national park area focuses on ways to better coordinate the management of the park and to improve visitor programs and access. The park legislation was amended in 1998 (Public Law 105-355) with authorization to "to acquire, in partnership with other entities, a less than fee interest in lands at Thompson Island...by donation, purchase with donated or appropriated funds, or by exchange."

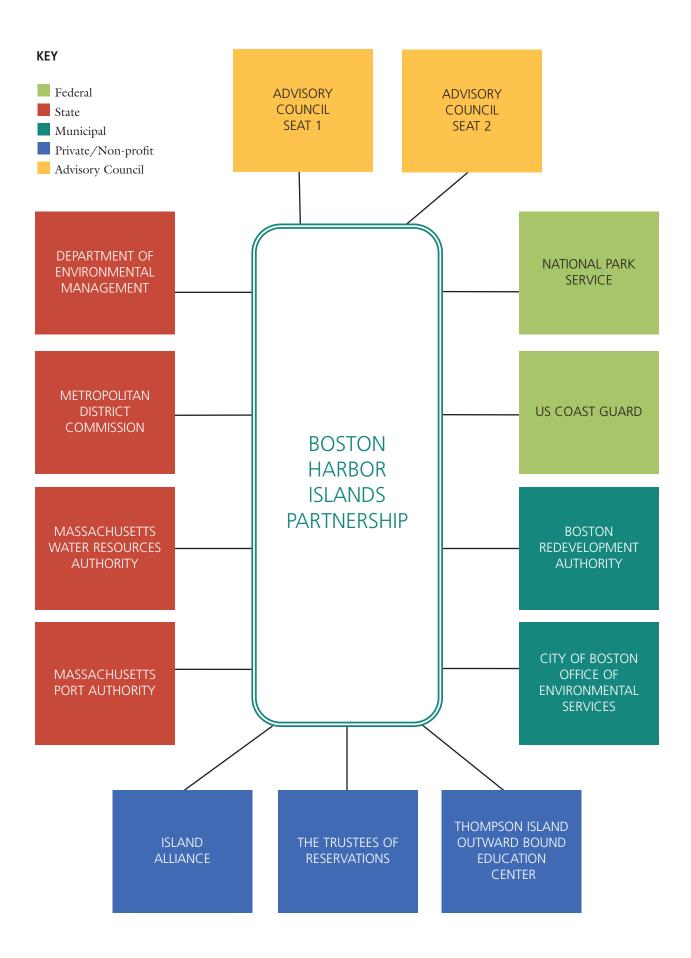
PARTNERSHIP MANAGEMENT OF THE PARK

National parks operate within a legal framework that applies to all units that make up the national park system. In addition, specific legislation authorizes and defines a particular park. Basic tenets of the 1996 park legislation are that: "The recreation area shall be administered in partnership by the Secretary, the Commonwealth of Massachusetts, City of Boston and its applicable subdivisions and others in accordance with the provisions of law generally applicable to units of the National Park System...." Toward that end, the legislation established the Boston Harbor Islands Partnership "whose purpose shall be to coordinate the activities of the Federal, State, and local authorities and the private sector in the development and implementation of an integrated resource management plan for the recreation area." The 13-member Partnership (12 members appointed by the Secretary of the Interior and 1 by the Secretary of Transportation) is responsible for planning and coordinating the park's management and development (see Current Management section).

The 1996 federal legislation also established the Boston Harbor Islands Advisory Council, a permanent federal advisory committee with no "sunset clause," whose members are appointed by the director of the National Park Service. The Advisory Council's purpose is to advise the Partnership on the development and implementation of the general management plan. The Council elects two of its members to seats on the Partnership and is mandated to seek advice from concerned citizens and organizations that have an interest in the park. The Council, which currently has 28 members, includes representatives of municipalities; educational and cultural institutions; environmental organizations; business and commercial entities, including those related to transportation, tourism, and the maritime industry; advocacy organizations; Native American interests; and community groups. Another unique aspect of the park is the Island Alliance, a nonprofit group charged with generating private funding for the park. It is the only such organization specifically named in a national park enabling law.

Generally, the 1996 legislation requires that the park is to be administered in cooperation with the private sector, with municipalities surrounding Massachusetts and Cape Cod bays, and with historical, business, cultural, civic, recreational, and tourism organizations.

Public agencies of the Commonwealth operate



under authorities from the Massachusetts legislature. The Massachusetts Environmental Joint Powers Agreement (chapter 491 of the Acts of 1996), which has not yet been employed, permits two or more agencies or jurisdictions to use their authorities, personnel, and resources jointly for an environmental purpose and in any geographic area they may choose. This law allows municipalities and state agencies to work together as well as to work with agencies in adjoining states. Another state law, the Massachusetts recreational use statute (M.G.L. c.21 S 17C) provides strong protection against liability for "an owner of land who permits the public to use such land for recreational purposes without imposing a charge or fee...."

OTHER LEGISLATIVE MANDATES

Closely allied with partnership management is the requirement that federal funding for the park be matched by nonfederal funding. All federal funds that may be appropriated over time to implement the 1996 law may only be expended in a ratio of one federal dollar to at least three dollars from other sources. The nonfederal share may be in the form of cash, services, or in-kind contributions.

In addition to requiring a partnership approach and management in accordance with laws governing the national park system, the 1996 legislation for the Boston Harbor Islands has other specific mandates for managing the national park area. The law incorporates a map showing which islands are included in the park, as well as language permitting the NPS to spend appropriated funds on mainland locations for park infrastructure like piers and information kiosks. However, the law directs that federal funds will not be appropriated for the acquisition of lands, except possibly for a conservation easement or other less-thanfee interest on Thompson Island.

It is explicit in the 1996 law that the right of the Commonwealth of Massachusetts, or any of its political subdivisions, remains unchanged regarding the exercise of civil and criminal jurisdiction or the right to carry out state laws, rules, and regulations within the park.

The legislation also stipulates that the maintenance, operation, improvement, use, and associated flight patterns of Logan International Airport "shall not be deemed to constitute the use of" the park nor "to have a significant effect on natural, scenic, and recreation assets" of the park.

All units of the national park system are required by law to operate in accordance with an approved

general management plan [Public Law 95-625, Section 604(b)]. The 1996 enabling legislation requires that the Boston Harbor Islands Partnership develop and implement a general management plan called, an "integrated resource management plan." Both legislative mandates are met by this document, which adopts the more common term "general management plan" (see Purpose of the General Management Plan).

Finally, the park's enabling legislation highlights the importance of understanding the history of Native American use and involvement with the islands, and calls for protecting and preserving Native American burial grounds, particularly those connected with the King Philip's War. This Congressional recognition of the importance of Indian history and of King Philip's War has raised public awareness around these topics. It has also resulted in raising park managers' sensitivity to the complex issues surrounding the management and interpretation of natural and cultural resources associated with American Indian use of the islands. The establishment of the park has brought a new focus for tribes with cultural affiliation to the islands and their resources.

PURPOSE OF THE GENERAL MANAGEMENT PLAN

The purpose of the general management plan is to clearly define the park's mission and management direction. It provides a foundation to guide and coordinate all subsequent planning and management. The purpose of the plan is also to ensure that this basic foundation for decision making has been developed by the Boston Harbor Islands Partnership in consultation with interested stakeholders and adopted by the National Park Service after adequate analysis of the benefits, environmental impacts, and economic costs of alternative courses of action. It acts as a "contract" between park managers and the public.

All parks within the national park system are required by law to operate under approved general management plans. This ensures that park managers will carry out, as effectively and efficiently as possible, the mission of the National Park Service, which states:

The National Park Service preserves unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

The general management plan describes the resource conditions and visitor experiences that should exist at Boston Harbor Islands, and why they should exist. It describes why the park was created, what specific resource conditions and visitor experiences need to be maintained in the park, and what those decisions mean in terms of broad direction for resource management, visitor use, and development of park infrastructure.

The general management plan takes the long view, 15–20 years into the future. The plan considers the park holistically, in its full cultural and ecological contexts: as a unit of the national park system and as a part of Boston Harbor, harbor communities, and the greater metropolitan area.

The plan is a policy-level document that provides guidance for park managers. It is not detailed, specific, or highly technical in nature. As the foundation for all subsequent planning and management, other plans tier off of the general management plan. It provides a consistent framework for coordinating and integrating all the various types of park planning and implementation that are needed.

After the general management plan is adopted, a five-year strategic plan will be developed to lay out goals and management actions needed in the near term. When funds become available to begin the design of facilities or to undertake other specific actions on individual islands that are consistent with the general management plan, then site-specific planning and technical environmental analysis will be done. These more specific undertakings will be subject to federal and state consultation requirements, and the public will be involved throughout the process.

The four basic elements required of NPS general management plans (by Public Law 95-625) are:

- measures for **preservation** of the area's natural and cultural resources
- types and general intensities of development associated with public enjoyment and use of the area, including general locations, timing of implementation, and costs
- identification and implementation commitments for visitor carrying capacities
- potential boundary modifications and the reasons therefor

In addition to the general Park Service planning mandate, the 1996 enabling legislation for the Boston Harbor Islands specifically calls for the development of a plan to help guide the Boston Harbor Islands Partnership in coordinating and prioritizing efforts,

such as improved public access to the islands. The law highlights a number of topics the plan should address:

- a program for coordinated administration, with assignment of responsibilities to the appropriate government agency or nonprofit organization
- a financing plan for public improvements and services recommended in the plan, including a delineation of profit-sector roles and responsibilities
- a program for coordinating and consolidating agency activities related to planning and regulation
- policies and programs to enhance public outdoor recreation in the area
- policies and programs to conserve, protect, and maintain the scenic, historical, cultural, natural, and scientific values of the islands
- policies and programs to develop **educational opportunities** in the area
- policies and programs to enhance public access to the islands
- identification of potential **sources of revenue** from programs or activities in the area
- policies and programs to protect and preserve American Indian burial grounds connected with the King Philip's War internment period and other periods
- a policy statement that recognizes existing economic activities within the recreation area

CURRENT MANAGEMENT

The Boston Harbor Islands national park area is operated day to day by the agency property owners and managers who work through the Partnership to introduce and maintain consistency parkwide and to create parkwide programs. Several of the member agencies have been managing island properties for many years, and their current management reflects, in some instances, long-standing plans along with new ideas introduced through the new national park area. The Partnership has begun setting the overall policy direction, adhering to National Park Service standards, and Partnership committees have begun serving as coordinators of parkwide functions and information-sharing forums.

The core of this park system is the Boston Harbor Islands State Park. Under state legislation in 1970, the Commonwealth was authorized to acquire islands in Boston Harbor to protect resources and provide recreation. Approximately 150,000 people visit the

state park annually, with a concentration of visitors on summer weekends. The Boston Harbor Islands State Park consists of 16 islands managed jointly by the Department of Environmental Management and the Metropolitan District Commission. Three islands are open and staffed for visitors from May until October during daylight hours, and three are staffed 24 hours a day for campers. Special events are held at other times of the year. (See Visitor Services Chart, page 25.)

The Boston Harbor Islands Partnership, which first convened in June 1997, consists of 13 people representing the following entities: United States of America – National Park Service and U.S. Coast Guard; Commonwealth of Massachusetts – Department of Environmental Management, Metropolitan District Commission, Massachusetts Water Resources Authority, and Massachusetts Port Authority; City of Boston – Office of Environmental Services and Boston Redevelopment Authority; Thompson Island Outward Bound Education Center; The Trustees of Reservations; Island Alliance; and Boston Harbor Islands Advisory Council (2 members).

MEMBERS OF THE PARTNERSHIP

National Park Service (NPS)

The National Park Service provides staff to the Partnership and Advisory Council through a dedicated project office as well as substantial planning assistance from the Boston Support Office. On the mainland, NPS provides parkwide information and orientation, in coordination with the Partnership. It coordinates the operation of visitor contact stations at Long Wharf and the federal courthouse at Fan Pier utilizing staff from NPS, Department of Environmental Management, Metropolitan District Commission, the Island Alliance, and volunteers from the Friends of the Boston Harbor Islands. The Fan Pier facility contains a seasonal information desk, an interactive exhibit, a bookstore, and a small fast-food restaurant. The project office also coordinates the main visitor information telephone line for parkwide activities and an interactive web site. The only NPS land ownership authority is potentially to acquire a conservation easement or other less-than-fee interest on Thompson Island on behalf of the Partnership.

U.S. Coast Guard (USCG)

The United States owns three major lighthouses on islands in the park—Boston Light, Long Island Head Light, and The Graves Light, as well as the navigational marker Nix's Mate and the freestanding Deer Island Light (not in the park) off the tip of Deer

Island. The Coast Guard operates Boston Light Station on Little Brewster Island, which has been legislated to be continued as a staffed lighthouse, the only such remaining station in the United States. Little Brewster is the site of America's first lighthouse (1716) and the second oldest lighthouse tower (1783). The other two lighthouses are completely automated, and the Coast Guard performs routine maintenance on at least a quarterly basis. Long Island Head Light (1819), located on the northeasternmost end of Long Island, offers outstanding views of the main channel into Boston and the northern regions of the park. Access at this time (by reservation only) is by boat or vehicle through the city of Boston's facilities on Long Island, which are not open to the public. The Coast Guard carried out a major repair and rehabilitation on the light within the past two years. The Graves Light, on a small island of bedrock, is inaccessible to the public due to the lack of a large boat mooring, the numerous rock outcroppings, and the range of tide and wave action at the site. In July 1999, the Coast Guard opened Little Brewster Island for limited public access under a pilot program in cooperation with the Island Alliance, U.S.Coast Guard Auxiliary, the Friends of the Boston Harbor Islands, and NPS.

Massachusetts Department of Environmental Management (DEM)

DEM, established as the Department of Natural Resources in 1897, is the agency that operates the state's forests and parks system. It manages 13 islands in the Boston Harbor Islands State Park: Bumpkin, Gallop's, Grape, Great Brewster, Middle Brewster, Outer Brewster, Calf, Little Calf, Green, Hangman, Raccoon, Slate, and Sheep. It also manages Spectacle Island (see map, page 24 and Appendix 11) jointly with the city of Boston. Spectacle, scheduled to be opened in 2002, is being developed as a park capped with material from the Boston highway and tunnel project. Its history included a number of socially inhospitable uses, including, until 1959, the city's landfill. Islands that are developed for visitors are Bumpkin, Gallop's, and Grape; together they receive approximately 23,000 visitors per year. In past years, Great Brewster and Calf islands had piers and water shuttle service. DEM expects to construct a new pier on Great Brewster to open the island again to the public. Public access to Calf Island will occur on a controlled basis. Currently these islands are accessible by small craft, i.e. private boaters. Headquarters for the state park are adjacent to the ferry terminal at

Hingham, where DEM also maintains an information board at Hewitt's Cove.

Metropolitan District Commission (MDC)

MDC, which was established as the Metropolitan Parks Commission in 1893, operates a 20,000-acre park system throughout the 36 cities and towns of metropolitan Boston. In Boston Harbor, it manages three islands of the state park: George's, Lovell's, and Peddock's. (See maps, pages 21, 23.) George's, the island hub for the ferry system, receives the great majority of island visitors—approximately 100,000 annually. Visitors come to explore Fort Warren, the Civil War era fort that has been partially restored, or to enjoy the grounds around the fort for picnics. Lovell's, which features a lifeguarded beach and Fort Standish, a turnof-the-century-era fortification, receives about 13,000 visitors. Peddock's, the second largest harbor island, contains more than 20 buildings that remain of Fort Andrews, built in 1900 (see Appendix 12). It also has approximately 40 summer cottages which are gradually being vacated and removed, campsites, wetlands, and beaches. A new pier is expected to support a great increase in visitors, which in the past numbered approximately 25,000 annually.

Massachusetts Water Resources Authority (MWRA)

MWRA was created in 1985 to carry out the "Boston Harbor Project" by building and operating new wastewater treatment facilities and eliminating the discharge of sewage into the harbor. MWRA owns and operates two facilities within the park: Deer Island Wastewater Treatment Plant and Nut Island Headworks. Both facilities are actually on what have become mainland peninsulas accessible by foot, bicycle, and vehicle, but each has a large pier, that will be used as the primary visitor access point to Deer and Nut islands when construction has been completed and the islands have been opened routinely for visitors. At Deer Island (see map page 20), two-thirds of the island's 210 acres are taken up by the wastewater treatment plant, which serves 43 communities with a total population of 2.5 million. MWRA provides guided tours of its facilities, including an historic pump house, from April to October; its perimeter walkway, with excellent views to other islands, has been open for recreational visitors for two years. On Nut Island a 14-acre park of walking paths and views of Ouincy and Hingham Bays opened in fall 1999. MWRA continually monitors the quality of water in Boston Harbor.

Massachusetts Port Authority (MassPort)

Operating Logan International Airport and a number of key maritime industrial facilities in the port are the Authority's primary missions. In addition to Logan, MassPort owns nearly 600 acres along the Boston waterfront, including maritime industrial facilities in South Boston (Conley Container Terminal, Black Falcon Cruise Terminal, and the North Jetty) and in Charlestown (Boston Autoport and Medford Street Terminal). MassPort owns, operates, and/or leases a number of other noteworthy waterfront properties: the Boston Fish Pier, the World Trade Center, and significant additional development property in South Boston; the East Boston Piers (including Piers Park); and Constitution Plaza at Hoosac Pier in Charlestown. While MassPort does not directly own or operate any of the Boston Harbor Islands, several of its properties, particularly those near the future Boston Convention and Exhibition Center in South Boston and the East Boston Piers, are potential locations for water transportation and visitor facilities that could provide connections to the islands in the future.

City of Boston

The City of Boston owns Long (see map, page 22), Moon, and Rainsford islands, and part of Spectacle Island. Long and Moon islands are not open for public recreational use, but instead are used for social services at a campus on Long Island, and a police firing range and fire-fighting training on Moon Island. The city plans to continue these uses in the foreseeable future, as no mainland sites to which these functions could be located are expected to be identified. However, discussions have begun about opening portions of Long Island to limited public access by water. In recent years, several programs, such as a native plant nursery (by the Friends of the Boston Harbor Islands), a twoweek summer day camp (with the New England Aquarium), and a Boston Parks Department fishing contest, have allowed limited public access. Rainsford Island is accessible only by private watercraft and has no visitor facilities or services.

Boston Redevelopment Authority (BRA)

Boston Redevelopment Authority is the City of Boston's planning, economic, and industrial development agency. One of BRA's planning functions is to oversee planning and permit development along Boston waterfront. The Authority initiated the Harborwalk program which, when complete, will provide a 43-mile pedestrian walkway along the waterfront ensuring that the public has access to the

water's edge. It owns the Boston Marine Industrial Park, and owns and manages Long Wharf in downtown Boston. The north side of Long Wharf currently contains a marina and docking facility for water shuttles and commuter boats. The south side of the wharf contains a ticket booth and docking facilities for excursion vessels and the Boston Harbor Islands ferry terminal. BRA plans to rebuild a wharf (at the site of historic T Wharf) next to Long Wharf with new docks and pier infrastructure to serve as the permanent main downtown terminal for the harbor islands ferry system.

Thompson Island Outward Bound Education Center (TIOBEC)

Since the early 1800s, Thompson Island has served as a home of educational institutions, making it the oldest continuously operating educational site in the city. The experiential education tradition started with the Boston Farm and Trade School (1832–1955) where young men lived on the island, attended classes, farmed, and practiced various trades. Thompson Island today is owned and managed by a private nonprofit educational institution which incorporates Outward Bound principles of respect for self, empathy for others, responsibility to community, and stewardship of the environment. In addition to operating a private middle school for boys from metropolitan Boston, this nonprofit organization offers school-year and summer programs for Boston public schools. Currently the Thompson Island Outward Bound Education Center raises \$2 million for scholarships. To promote visitation and to generate revenue for island programs, the Center offers Outward Bound programs for area organizations, and seasonal outings, events, and conferences. The public has access to Thompson Island during the summer on Saturdays through tours by the Friends of the Boston Harbor Islands. Annual visitation, which is largely school groups, totals 26,000.

The Trustees of Reservations (The Trustees)

The Trustees is a nonprofit, member-supported conservation organization which owns and manages World's End for public recreational uses, such as walking, bicycling, horseback riding, fishing, picnicking, and cross-country skiing. World's End is a mainland peninsula and can be reached by foot, bicycle, and vehicle. An entrance fee is charged, and the reservation is open every day of the year. Annually, it receives approximately 60,000 visitors. The Trustees owns and operates 82 reservations throughout the state totaling some 21,000 acres. The Trustees is considering the feasibility of building a pier for water access.

Island Alliance

The Island Alliance was established in 1996 solely to provide financial support to the Boston Harbor Islands national park area. It works to attract investment and support for the park from the private sector, coordinating outside activities to provide necessary strategic and financial resources. It assists directly with the support of mainland facilities, such as the visitor contact station at Fan Pier which includes a retail outlet and food service.

Advisory Council

The Advisory Council has 28 members appointed by the director of the National Park Service to represent seven distinct interest groups: municipalities; educational and cultural institutions; environmental organizations; business and commercial entities; advocacy organizations; Native American interests; and community groups. The Council's role is to advise the Partnership in the planning and operation of the park through public involvement, and it has helped facilitate the public process in connection with this draft general management plan. It has two seats on the Partnership. It operates subject to the provisions of the Federal Advisory Committee Act.

RESOURCE PROTECTION

Natural and cultural resources and values require ongoing stewardship to leave them unimpaired while providing current and future generations with the opportunity to enjoy and benefit from them. DEM and MDC manage the state park islands in accordance with federal, state, and municipal laws and regulations, including those overseen by the Massachusetts Historical Commission, the Massachusetts Department of Environmental Protection, Coastal Zone Management, Natural Heritage Program, and local conservation commissions.

DEM, MDC, and the city of Boston have staff archeologists and cultural and natural resource specialists who provide technical assistance and staff training. These staff, along with planning and engineering staff, monitor the islands to assess needed improvements or management actions. During the summer season, six islands are staffed 24 hours a day to protect island resources and to provide visitor services. The islands are maintained principally by seasonal staff. (See Visitor Services chart, page 25.)

Managing agencies use various methods for determining the efficacy of development in light of resource protection. On Thompson Island, for example, no facilities may be built outside the central campus area. In general, resources are monitored, and planning is conducted before developmental changes

occur. The Town of Hingham owns and manages Langlee, Sarah, Ragged, and Button islands in Hingham Harbor as conservation land. These islands have been kept in their natural condition for passive recreational use, without facilities, services, or educational programs. The public accesses these islands by small private watercraft.

The intensity of resource protection varies depending on financial resources available to the agency. Some activities carried out by managers are: prohibiting access to fragile shoreline bluffs, signing and mulching designated trails to keep pedestrians away from vegetation, promoting environmental stewardship by direct and indirect educational techniques, horticultural maintenance of cultural landscapes, repair and stabilization of historic buildings.

Administrative Carrying Capacities

Some island managers have established an administrative carrying capacity for individual islands. The 1986 Boston Harbor Islands State Park Master Plan provided the most recent analysis of carrying-capacity criteria based on the combination of visitors' experience and an analysis of resource protection. Where they exist, carrying capacities were not scientifically determined and have not been applied throughout the island system. In the case of George's Island, for example, a limit of 5,000 visitors at a time for events has been established by MDC based on a combination of factors concerning impacts on resources, visitor safety, staffing levels, and management judgment.

RESEARCH AND INFORMATION

Research is conducted primarily by private and public institutions. Examples of research include long-term studies in archeology by professors at the University of Massachusetts, Northeastern University, and Boston University; various marine environmental research conducted by the Urban Harbors Institute of the University of Massachusetts at Boston; marine biotechnology, coastal management, nonindigenous species, ocean observation and modelling at Massachusetts Institute of Technology Sea Grant Program; marine environments at New England Aquarium; water quality by National Oceanic and Atmospheric Administration (NOAA); and bathymetry of the harbor by the U.S. Geological Survey at Woods Hole Oceanographic Institute. MWRA monitors the harbor's marine environment, including diversity of bottom-dwelling animal communities and sampling for disease and contaminants in fauna and flora. Important repositories of information about the islands include the Massachusetts State Archives, national register documents at the Massachusetts Historical Commission, and the Metropolitan District Commission's extensive archives and photograph collections.

VISITOR ACCESS, USE, AND ENJOYMENT

At this time, seven islands or peninsulas are staffed to serve park visitors: George's, Lovell's, Gallop's, Bumpkin, Grape, and Peddock's islands; and World's End peninsula. Passenger ferry service is available to George's, the hub island, from which water shuttle service is provided to the other five staffed islands. Other islands — Thompson, Deer, Nut, and Little Brewster — host visitors according to a schedule that depends on staff availability and scheduled boat excursions. (See Visitor Services chart, page 25.)

The overwhelming majority of ferry passengers remains at George's Island, which has a small visitor contact station, a concession snack bar, interpretive signs, and ranger-led tours of Fort Warren. Peddock's contains a small visitor contact facility in a former military guard house. Of the eight islands and peninsulas routinely open for park visitors, only George's has potable water (though not consistently reliable), along with a generator for electricity to run equipment and serve the resident island staff. All islands managed for visitors have toilets (mostly composting). All the staffed islands offer piers, picnic areas, trails, and guided interpretive walks. During the summer season, DEM and MDC have island managers who stay overnight on the islands.

When Spectacle opens in 2002, it will have a handicapped-accessible pier; a small day-use marina; two beaches; five miles of trails; and a visitor information center of approximately 7,500 square feet including a cafe, exhibits, a souvenir shop, staff living areas, and space for programs, lectures, and films (See Appendix 11). The island will be managed by a public-private partnership which has been contracted to operate island services.

A total of approximately 60 campsites are available on Lovell's, Peddock's, Bumpkin, and Grape for use under a reservation system. The campsites on the DEM islands (Bumpkin and Grape) are available through a computerized statewide system of reservations, whereas those on the MDC islands are reserved directly by phone with MDC.

Several tours of Boston Light by reservation have been offered by the Friends of the Boston Harbor Islands each summer since 1986. In 1999 the Coast Guard established a pilot program with the Island Alliance and the National Park Service to bring interpretive excursions to Boston Light on a more frequent basis. Excursion visitors, together with visitors in groups that currently come by small craft, total approximately 1,000 per year.

Transportation

From early May to mid-October, a passenger-ferry company under contract to the state provides service for the public to George's Island from three mainland points: downtown Boston, Hingham on the south shore, and Lynn on the north shore. George's is the long-standing transportation hub of the island system. The round-trip fare is \$8 for an adult and includes free water shuttle service among George's, Bumpkin, Gallop's, Grape, Lovell's, and Peddock's islands. Vessels used for ferries hold 350 to 500 passengers, whereas water-shuttle vessel sizes range from 49 to 150 passengers.

More than 80 percent of ferry passengers leave from Long Wharf in downtown Boston, where the Boston Redevelopment Authority leases space to boat operators (the balance leave from Hingham and Lynn). An undetermined percentage of island visitors, with estimates up to 50 percent, arrive by private boat and tie up at piers, or anchor offshore, or haul their craft onto beaches. Hewitt's Cove in Hingham is a transportation node not only for island service but also for commuter boat service between the south shore and Boston. DEM has its state park headquarters in a former shipyard building there. A pier at Lynn Heritage State Park, operated by DEM, provides the current embarkation point from the north shore, running one round-trip ferry per weekend day during the summer season.

Access for disabled people, which is not universally available throughout the system, is a provision made especially difficult by the steep grade changes that occur on boarding vessels in the $9\frac{1}{2}$ -foot tide of Boston Harbor. Neither boats nor piers are fully handicapped accessible, although piers at Peddock's, Spectacle, and Deer will be. DEM is designing improvements at Gallop's Island.

Over the years of state park operations, several transportation systems have been tried. Currently, a sole operator is under contract to DEM and MDC to provide passenger service from the three mainland points and to provide free inter-island water shuttle service. In the 1980s, a state subsidy (no longer

available) supported the water shuttle, and multiple private boat operators established services from a number of points on the mainland while state park managers coordinated docking among them.

For the immediate future, from 2000 to 2001, the state will be issuing a new contract with the potential for adding mainland departure points. The opening of Spectacle Island in 2002 will add another hub to the water transportation system. Additional islands to be connected potentially to the ferry system with the opening of Spectacle include Deer and Thompson, with the possibility of adding mainland departure points from the north and south shores.

Road access is the only means available to World's End at this time, although a pier for water access is contemplated by The Trustees. Other islands accessible by road are Deer, Nut, Moon, and Long, although policies by the owners of those islands discourage park visitors from using automobiles out of concern for traffic through adjacent neighborhoods.

EDUCATION AND INTERPRETATION

Seasonal programs for visitors include daily ranger-led fort and island nature tours. DEM interpreters hold scheduled events ranging from their Wild Walks, which explore the islands' natural beauty, to "Kidleidoscope," a nature-oriented program for children four to eight years old throughout the summer. MDC schedules a variety of events including "Mysteries of the Fort," which explores Fort Warren on George's Island, and "Mothers, Daughters, Sisters—Women at Fort Warren," which explores the role of women at Fort Warren in times of war and peace. MDC also has a Harbor Defense Weekend, where rangers interpret the role of the harbor forts in wartime as well as programming on pirates and archeology in the harbor. Other MDC events include a Civil War encampment, a children's fest, a Halloween event, and with the Island Alliance, an opening day concert.

School programs at the state park islands are operated by the agencies in April, May, and June, with classes reserving time mostly on George's, but also occasional programs at Bumpkin, Gallop's, Grape, Lovell's, and World's End. Also available is the *Envirolab II*, a private scientific vessel which runs two programs a day for school groups from a pier at the University of Massachusetts, Boston.

The Willauer School, a private middle school for urban boys, operates on Thompson Island through the

school year, serving day students and boarders. Outward Bound, nationally known sea- and land-based expeditions for youth, offered in the summer, are geared to experiential learning and personal growth, challenging participants to go beyond their perceived limits, make responsible choices, and work in concert with others.

Other nature, historic, and recreational programs occur throughout the year, and primarily in summer. The city of Boston and the New England Aquarium, in a pilot program, operated a summer camp on Long Island which introduced youth to the islands' history and habitats. Visitors could also tour a working United States Coast Guard lighthouse at Little Brewster Island, and a working wastewater sewage facility on Deer Island. Ongoing activities include concerts, historic reenactments, boating, swimming, sunset cruises, and lighthouse cruises. The Harbor School in Dorchester, along with the Island Alliance, is developing a middle school curriculum which uses the harbor and the harbor islands as the basis for its science and historical studies. Programs on World's End take place throughout the year and include bird walks, geology explorations, a summer solstice celebration, a butterfly walk, and tree identification walks.

Many educational programs are offered on the harbor by organizations that work closely with the Partnership, such as the New England Aquarium and the Hull Lifesaving Museum. The "Harbor Visions Crew," a collaborative project of several organizations, trains 15 to 20 youths each summer to conduct outreach programs to their peers with a curriculum related to the Boston Harbor environment. And, the Boston Harbor Association works with MWRA to educate students about the Deer Island treatment facility.

MANAGEMENT AND OPERATIONS

Staffing

Full-time permanent staff for park administration, visitor services, and resource protection are employed by NPS, the U.S. Coast Guard, DEM, MDC, Thompson Island, The Trustees, and the Island Alliance, and seasonal staff is added by most of these agencies. The approximate number of full-time equivalent park staff employed directly in operations and visitor services for the Boston Harbor Islands is NPS – 4, Coast Guard – 4, DEM – 6, MDC – 10, Thompson Island – 15, The Trustees - 1.5, Island Alliance – 2, for a total of approximately 45 full-time equivalent personnel. Seasonal employees add approximately 32 full-time equivalent staff.

DEM, MDC, Thompson Island, MWRA, and The Trustees maintain heavy equipment for managing their properties. Most organizations maintain boats for transporting their employees and MDC has two landing craft for transport of vehicles and equipment and beaching on islands without piers.

Public Safety

Public safety is handled by many entities: Massachusetts State Police, Massachusetts Environmental Police, agencies that manage islands, municipalities, harbor masters, and the U.S. Coast Guard. While there is no central coordinator, the Partnership committee on public safety has furthered coordination and communications among the nine island owners, ten law enforcement jurisdictions, and three counties, resulting in less duplication of effort.

The Coast Guard has two main centers of operation within the harbor. One is the Group Boston command, the headquarters for the Coast Guard's marine safety office and large Integrated Support Command, located on the Boston waterfront just north of Battery Wharf. Large ships moor here along with aids-to-navigation vessels. The other is a multimission station in Hull at Point Allerton, where small vessels are maintained. In the harbor, the Coast Guard is responsible for oil spill response, navigation and marine traffic management, recreational boating safety, search and rescue, and enforcement of all laws and treaties on waters subject to federal jurisdiction.

Costs and Financing

The BHI Partnership is developing a system to account for appropriate park expenditures, in keeping with the law's requirement of a three-to-one nonfederal-to-federal funding match for the park. It has held discussions about a number of approaches, including a funding pool.

Although the Partnership does not have its own budget, there are costs associated with maintaining it, borne mostly by the NPS project office acting as staff to the Partnership.

Some members of the Partnership can identify all expenditures associated with the Boston Harbor Islands national park area and some cannot. For instance, the Commonwealth funds DEM and MDC without a breakdown for the Boston Harbor Islands park because each state agency is responsible for and funds properties outside of the island system, making it difficult to identify precise funds for this park. Park accounting systems are also complicated by different fiscal years (the state fiscal year begins July 1, whereas

LAND OWNERSHIP & EXISTING TRANSPORTATION





LAND OWNERSHIP & EXISTING TRANSPORTATION

Legend

LAND OWNERSHIP

FEDERAL



US Coast Guard

STATE



Department of Environmental Management



Metroplitan District Commission



Massachusetts Water Resources Authority

MUNICIPAL



City of Boston



Town of Hingham



Town of Winthrop

PRIVATE NON-PROFIT



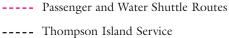
The Trustees of Reservations



Thompson Island Outward Bound Ed. Center

TRANSPORTATION







Mass Transit Stop

the federal fiscal year begins October 1, and the notfor-profit agencies have other fiscal years). Typically, state funds for each summer season are not certain to be available to DEM and MDC until the budget is passed in the late spring or summer, making it difficult to hire seasonal staff with enough advance time to prepare for a full season.

It is estimated that the current annual operating cost for the Boston Harbor Islands national park area is approximately \$4 million.

Boundary and Land Protection

Federal and state laws and policies address the subjects of the park boundary location and requirements for land protection. The park boundary includes the areas shown on the official map, referred to in the law (see map, following page 2), as well as landside points that may be "required for access, visitor services, and administration of the park."

The landside points specifically mentioned in the law are: in the city of Boston at Long Wharf, Fan Pier, Old Northern Avenue Bridge, the Custom House, John F. Kennedy Library, Charlestown Navy Yard, and other places on Harborwalk (a walkway along the water's edge); in the city of Quincy at Squantum Point, Marina Bay, the Fore River Shipyard, and Town River; in the Town of Hingham at Hewitt's Cove; the Town of Hull; in the city of Salem at Salem National Historic Site; and in the city of Lynn at the Heritage State Park. Inclusion in the boundary allows the expenditure of federal funds for park-related activities at those locales.

The extent of the island land area is taken to be the mean low water mark unless otherwise specified in the deed for a particular property. The law's reference to "lands and waters that comprise [the national park area]" refers to "waters" occurring within the land areas, such as ponds or streams, rather than the waters of Boston Harbor.

The park's enabling legislation leaves jurisdiction over harbor waters unaffected by the park and retains it in the purview of several agencies including: for the state, the Department of Environmental Protection; Executive Office of Environmental Affairs; Department of Environmental Management; Division of Fisheries, Wildlife, and Environmental Law Enforcement; State Police; Massachusetts Historical Commission;, and Massachusetts Coastal Zone Management; for the federal government, the Army Corps of Engineers and the Coast Guard; and for local municipalities, conservation commissions, water and sewer authorities, and specifically for Boston, the Boston Redevelopment Authority.

Another feature of the law establishing this national park area is that land would not be owned by the National Park Service except potentially for a conservation easement or other less-than-fee interest on Thompson Island.

EXTERNAL COOPERATION

The park is connected to several municipalities on the harbor rim and has maintained important relationships with them. Although only World's End is fully open to park visitors at this time, others that will open in the future, such as Deer and Nut islands, have agreed to encourage water rather than road access and thus lessen traffic impacts to neighborhoods. DEM, which has a long-term presence at Hewitt's Cove, where a large-scale mixed residential and commercial development is proposed, is working closely with the community on the planning.

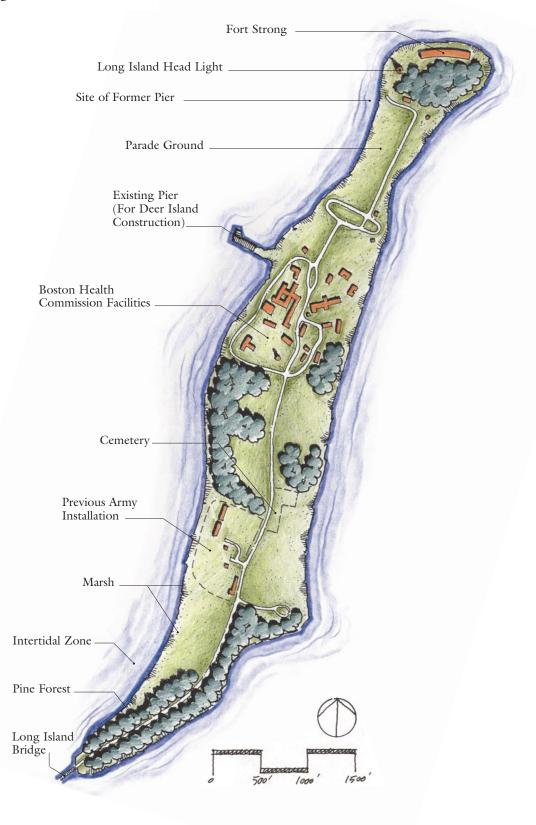
In addition to municipalities the Partnership maintains important relationships with many non-government and government entities. These include the Friends of the Boston Harbor Islands, Save the Harbor/Save the Bay, The Boston Harbor Association, Hull Lifesaving Museum, New England Aquarium, U.S. First District Court, Environmental Diversity Forum, Roxbury Multi-Service Center, Urban Harbors Institute at the University of Massachusetts, Massachusetts Marine Educators, the Metropolitan Area Planning Council, the Greater Boston Chamber of Commerce, and many others.

DEER ISLAND

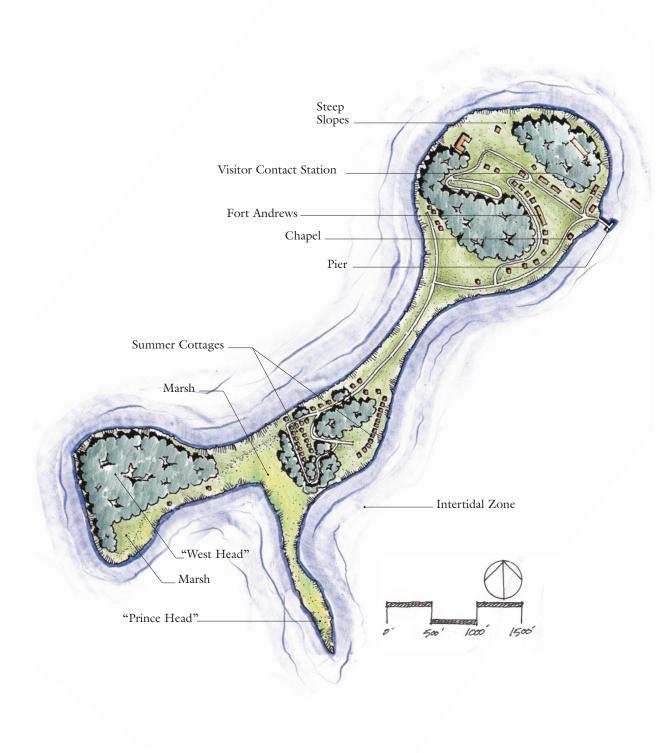


GEORGE'S ISLAND

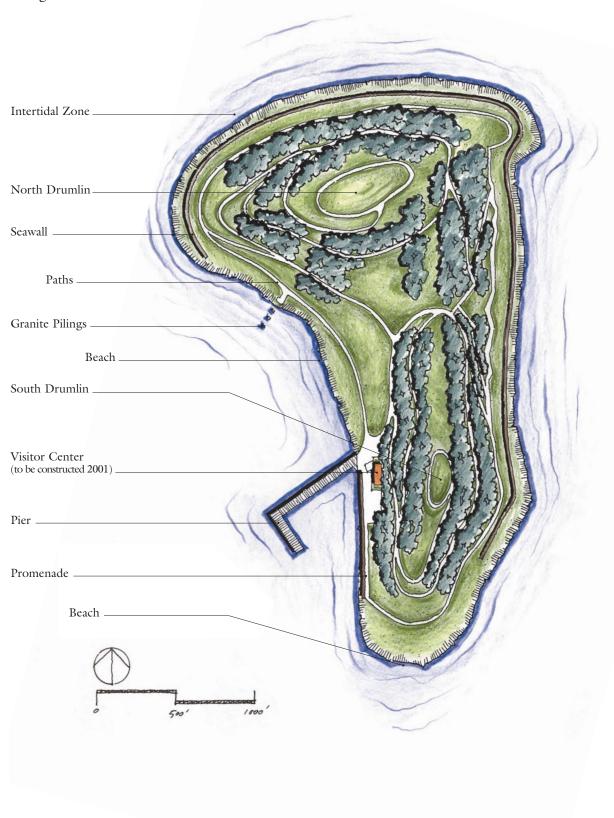




PEDDOCK'S ISLAND



SPECTACLE ISLAND



CURRENT VISITOR SERVICES

C U R R E N T S E R V I C E		ITOR	affed "	Guided T.	Lifeguard	Visitor C+	Drinking M.	offesh.	Toilet Face	' ^{acul} ities ^{Cnic} Arc	Hiking Path	Camp Sites	storic c.	Passenge 1	Water St.	Boat Slips	shick 1	Open by A.	" Arrangem
Island	Acres*	Manager	25	G	Ĺį	2	0	A _P	20	, j	Ħ	٣	Ŧ	₫0	2	ВС	30	<u>~</u>	
Bumpkin Island	32.7	DEM	Χ	Х		Χ			Χ	Χ	Χ	Χ	Χ		Χ				
Button Island	1.0	Town of Hingham									Χ								
Calf Island	22.4	DEM									Χ		Χ						
Deer Island	203.5	MWRA	**	Χ		Χ	Χ		Χ		Χ		Χ				Χ	X	
Gallop's Island	26.9	DEM	Χ	Χ		Χ			Χ	Χ	Χ		Χ		Χ				
George's Island	41.3	MDC	Χ	Χ		Χ	Χ	Χ	Χ	Χ	Χ		Χ	Χ	Χ	Χ			
Grape Island	53.7	DEM	Χ	Х		Х			Χ	Χ	Χ	Х	Χ		Χ				
The Graves	1.8	U.S. Coast Guard											Χ						
Great Brewster	23.9	DEM									Χ		Χ						
Green Island	1.7	DEM																	
Hangman Island	0.3	DEM																	
Langlee Island	5.2	Town of Hingham																	
Little Brewster Island	3.1	U.S. Coast Guard	**	Х									Χ					Х	
Little Calf Island	0.8	DEM																	
Long Island	225.2	City of Boston											Χ						
Lovell's Island	51.9	MDC	Χ	Х	Χ	Χ			Χ	Χ	Χ	Χ	Χ		Χ				
Middle Brewster Island	13.6	DEM											Χ						
Moon Island	45.7	City of Boston											Χ						
Nut Island	14.0	MWRA	**	Χ							Χ						Χ	Χ	
Outer Brewster Island	20.1	DEM											Χ						
Peddock's Island	210.4	MDC	Χ	Χ		Χ			Χ	Χ	Χ	Х	Χ	Χ	Χ				
Raccoon Island	3.6	DEM																	
Ragged Island	4.1	Town of Hingham									Х								
Rainsford Island	21.6	City of Boston											Χ						
Sarah Island	4.6	Town of Hingham																	
Sheep Island	3.2	DEM																	
Slate Island	12.7	DEM																	
Spectacle Island (when open in 2002)	105.0	DEM & City of Boston	Χ	Х	Х	Χ	Х	Χ	Х	Χ	Х			Χ	Х	Х			
Thompson Island	169.9	Thompson Is. Outward Bound	**	Х			Х		Х	Χ	Χ		Χ	Χ				Х	
World's End	274.3	The Trustees of Reservations	Χ			Χ			Χ		Χ						Χ		

^{*} Acreage derived from measurements in GIS by Environmental Data Center, University of Rhode Island ** Full-time Staff